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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/025,760

12/26/2001

John F. Zumkehr

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12/28/2005

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EXAMINER

TABONE JR, JOHN J

ART UNIT

PAPER NUMBER

2138

DATE MAILED: 12/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/025,760

Applicant(s)

ZUMKEHR, JOHN .F.

Examiner

John J. Tabone, Jr.

Art Unit

2138

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-28 have been examined.
2. The Examiner has withdrawn the objection to the Drawings as a result of the Applicant's amendment.

Response to Arguments

3. Applicant's arguments filed 10/24/2005 have been fully considered but they are not persuasive.

As per arguments for independent claims 1, 9, 17 and 23:

Applicant states on pages 9 and 10 of he Remarks/Arguments, "Applicant notes that a) the Office Action does not actually cite to any sections in Mccord, but rather relies on a general cite to the sequencer element 100 and b) does not actually allege the sequencer 100 of Mccord generates clock test patterns and data test pattenms as specifically recited in the embodiment of claim 1. Applicant submits the Mccord reference does not actually disclose any where that sequencer 100 generates any clock or data test patterns in its disclosure, and that for at least the following reasons it is not the equivalent of a pattern generating device used to generate a clock test pattern and a data test pattern (as specifically recited in the embodiment of claim 1)". The sum of the Applicant's arguments is "the sequencer 100 does not actually generate test patterns at all, but rather acts merely as a store for test results and test procedures". The Examiner would like to point out that the previous Office Action of Record stated that sequencer

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100 is coupled to CPU 30 by a communication interface 102 through which sequencer 100 receives test parameters, test data, correct test results, and test procedures. It is CPU 30 that generates the test patterns not sequencer 100. This is further substantiated on page 3, ¶ 58, which teaches each tester logic board 12 includes a central processing unit (CPU) 30 (**pattern generating device**) that controls the testing performed by that tester logic board 12. CPU 30 receives test procedures, test parameters, test data and expected test results from host 16 via communication bus 20 and communication interface 32. Based upon these inputs, CPU 30 generates a number of output signals 34-44 (described further below) (i.e. test parameters, test data, correct test results, and test procedures as described above) to orchestrate the operation of the other components of tester logic board 12 during testing. It is by this the Examiner asserts that McCord teaches the claimed pattern generating device.

It is the Examiner's conclusion that independent claims 1, 9, 17 and 23 are not patentably distinct or non-obvious over the prior arts of record namely, McCord (US-2003/0076125). Therefore, the rejection is maintained. Based on their dependency on independent claims 1, 9, 17 and 23, claims 2-8, 10-16, 18-22 and 24-28, respectively, stand rejected.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3, 5-9, 11, 13-16, 23, 25, 27 and 28 are rejected under 35

U.S.C. 102(e) as being anticipated by McCord (US-2003/0076125), hereinafter McCord.

Claims 1, 7-9, 15, 16, 23, and 27:

“a pattern generating device to generate a clock test pattern and a data test pattern”

McCord teaches that sequencer 100 is coupled to CPU 30 (**pattern generating device**) by a communication interface 102 through which sequencer 100 receives test parameters, test data, correct test results, and test procedures, which are stored by sequencer 100 in random access memory (RAM) 104. McCord also teaches sequencer 100 is further connected to a DDR memory controller 236, which controls DUT 14 through relays 92 and connector 22.

“buffer devices to receive said clock test pattern and said data test pattern”

McCord teaches DDR memory controller 236 may further be coupled to optional DDR memory devices 243, which permit test instructions, test data, and/or test results

to be buffered by DDR memory controller 236 before transfer to sequencer 100 for storage in RAM 104.

“a pattern checking device to check patterns received from said buffer devices”

McCord teaches in response to receipt of test results from DUT 14, sequencer 100 logs the test results in RAM 104 and compares the test results with correct results also stored in RAM 104 to make a pass/fail determination for DUT 14.

“clock generating logic to control a clock for said clock test pattern and a clock for said data test pattern”

McCord teaches communication between DDR memory controller 236 and DUT 14 is synchronized by timing signals based upon controller clocks 120, which are received by DDR memory controller 236. McCord also teaches controller clocks 120 are selected by selector 124 (as per claims 7, 15 and 27) from among a plurality of clock signals generated by clock sources 122 in response to a clock select signal 38 (as per claims 8 and 16) output by CPU 30. (Pages 3-4, ¶s 62-65).

Claims 3, 11, and 25:

“said test mode comprises an AC I/O loopback test”

McCord teaches during testing, sequencer 100 sets AC test parametrics for DUT 14, initiates READ and WRITE data transfers to and from DUT 14, and issues commands for DUT 14 based upon the test information stored in RAM 104. McCord also teaches in response to receipt of test results from DUT 14, sequencer 100 logs the

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test results in RAM 104 and compares the test results with correct results also stored in RAM 104 to make a pass/fail determination for DUT 14. (Page 4, ¶ 64).

Claims 5 and 13:

McCord teaches said buffer devices are provided within a memory controller. (Page 4, ¶ 63). Also refer to the rejection of claims 1, 9 and 23 above.

Claims 6, 14 and 28:

“clock generating logic includes a delay element”

McCord teaches in order to test the timing sensitivity of DUT 14, DQS signals 242 and 244 are among the signals passed through respective sets of programmable delays 238 and 240, which applies a delay specified by a respective one of tester logic (TL) delay signals 40 and DUT delay signals 42. (Page 4, ¶ 65).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2, 4, 10, 12, 17-22, 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCord (US-2003/0076125), hereinafter McCord, in view of Kanda et al. (US-6671787), hereinafter Kanda.

Claim 17:

“A clock generating circuit to generate a first clock signal and a second clock signal for a DDR device,”

McCord teaches communication between DDR memory controller 236 and DUT 14 is synchronized by timing signals based upon controller clocks 120, which are received by DDR memory controller 236. McCord also teaches controller clocks 120 are selected by selector 124 from among a plurality of clock signals generated by clock sources 122 (first and second clocks) in response to a clock select signal 38 output by CPU 30 (**clock generating circuit**). (Page 4, ¶ 65).

McCord does not explicitly teach **“said clock generating circuit generates said first clock signal in phase with said second clock signal when in a test mode and generates said first clock signal out of phase with said second clock signal when in a normal mode”**. However, McCord does teach, as disclosed above, a plurality of clock signals generated by clock sources 122 (first and second clocks) in response to a clock select signal 38 (normal mode or test mode). Kanda teaches clock buffer 16 generates a clock signal CLK0° (in phase) in synchronization with the rising edge of the external clock signal CLK, while it generates a clock signal CLK180° (out of phase) in synchronization with the falling edge of the external clock signal CLK. (Col. 9, ll. 2-6). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify McCord's clock sources 122 to include Kanda's teaches clock buffer 16.

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The artisan would have been motivated to do so because it would explicitly enable McCord's clock sources 122 to generate CLK0° (in phase) and CLK180° (out of phase) clocks to properly test the DDR device selected by selector 124.

Claims 2, 10, and 24:

“said clock generating logic operates such that in a test mode the clock for the clock test pattern is in phase with said clock for said data test pattern”

This claim limitation is rejected as per claim 17 above.

Claims 4, 12, and 26:

“said clock generating logic operates such that in a normal mode, said clock for said clock test pattern is out-of-phase with said clock for said data test pattern”

These claims are rejected as per claim 17 above.

Claim 18:

“said test mode comprises an AC I/O loopback test”

McCord teaches during testing, sequencer 100 sets AC test parametrics for DUT 14, initiates READ and WRITE data transfers to and from DUT 14, and issues commands for DUT 14 based upon the test information stored in RAM 104. McCord also teaches in response to receipt of test results from DUT 14, sequencer 100 logs the test results in RAM 104 and compares the test results with correct results also stored in RAM 104 to make a pass/fail determination for DUT 14. (Page 4, ¶ 64).

Claim 19:

McCord teaches said buffer devices are provided within a memory controller.
(Page 4, ¶ 63). Also refer to the rejection of claims 1, 9 and 23 above.

Claim 20:

“clock generating circuit includes a delay element”

McCord teaches in order to test the timing sensitivity of DUT 14, DQS signals 242 and 244 are among the signals passed through respective sets of programmable delays 238 and 240, which applies a delay specified by a respective one of tester logic (TL) delay signals 40 and DUT delay signals 42. (Page 4, ¶ 65).

Claims 21 and 22:

McCord teaches controller clocks 120 are selected by selector 124 (as per claim 21) from among a plurality of clock signals generated by clock sources 122 in response to a clock select signal 38 (as per claim 22) output by CPU 30. (Page 4, ¶ 65).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

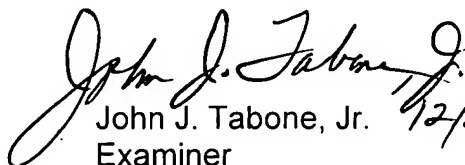
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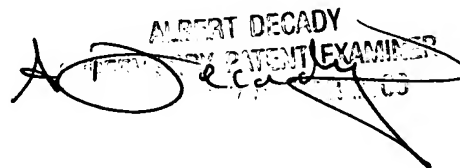
extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Tabone, Jr. whose telephone number is (571) 272-3827. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


John J. Tabone, Jr.
Examiner
Art Unit 2138


ALBERT DECADY
PATENT EXAMINER